BirEx JOURNAL
Budapest International Research in Exact Sciences
Medical, Biological, Argiculture, Engineering
Science and other related areas
e-ISSN : 2655-7827
p-ISSN : 2655-7835
http://www.bircu-journal.com/index.php/birex

Increasing the Value of Coconut Blondo in Potato Flour as a Basic Ingredient for Nutrition-rich Biscuits as an Alternative to Stunting Prevention

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Abstract: *The research aimed to analyze the nutritional content of biscuits made from potato starch with the addition of coconut blonde and the organoleptic characteristics of the panelists' liking for the biscuits. Resulting from. The method used in this research is descriptive, with the addition of the blonde treatment. The blondo addition treatment consisted of control, 10 g, 30 g, and 50 g blondo. Each treatment was repeated 3 times. The results of the research show that the chemical characteristics of potato-based biscuits with the addition of coconut blonde are water content 2.19 - 5.01%, ash content 2.47 - 3.30%, fat content 16.29 - 24.1%, protein content 6.34 - 9.07%, carbohydrate content 60.56 - 71.59%, crude fiber 2.25 – 2.68%, and calories 458.33 - 490.56 Kcal. Organoleptic characteristics of the panelists' level of preference for biscuits made from potato flour showed that the addition of coconut blondo obtained an average color value of 4.26 – 5.76 (neutral – liked), aroma 4.06 – 5.86 (neutral – liked), taste 4.7 – 5.1 (somewhat liked), texture 4.76 – 5.46 (somewhat like – like) and crispness 4.7 – 5.56 (neutral – like). The addition of blonde to making biscuits made from potato flour in terms of the nutritional content of protein, fat, and calories is by SNI Biscuits and is liked by the panelists. The biscuits produced can be used as snacks for pregnant women and toddlers as an alternative to preventing stunting.*

Keywords: *Potato flour; Blondo; Cookies*

I. Introduction

Processing coconut into oil produces the by-product blondo. Blondo is a by-product of processing pure coconut oil. It is characterized by the shape of small brown lumps and a savory texture because it contains pretty high levels of protein and fat. Blondo is a vegetable protein that contains essential amino acids. It can be used as an additional ingredient or alternative to highly nutritious food and is relatively cheap. The nutrients contained in coconut blondo include 19.54% protein, 2.51% ash, 3.52% water, 52.64% oil, and 21.78% carbohydrates (Fauzy, 2017). This high nutritional content, not followed by its use in society, needs to be used to diversify food from processed coconut products such as cakes and biscuits, prebiotic drinks, etc. Currently, blonde is generally only eaten directly and used as chili sauce or other food additives. The nutritional content in coconut blonde is a potential source of nutrition and can also be used in making biscuits.

The chemical composition of potato starch per 100 g is 9.1 g protein, 0.3 g fat, 75.3 g carbohydrates, 10.6 g fiber, and 0.5 g phosphorus (Avula and Singh, 2008). Apart from carbohydrate content, potato starch is an essential ingredient that must be added to ingredients containing protein and fat, such as coconut blonde, to obtain a final product that meets

nutritional requirements and is liked by consumers, such as biscuits.
Biscuits are dry cakes made from flour, which is generally made from wheat flour and other supporting ingredients such as margarine, eggs, sugar, baking powder, vanilla, salt, cornstarch, and powdered milk. The characteristics of biscuits, in general, are that they have a crunchy texture and a yellow-brown color.

Using potato starch with the addition of coconut blonde in making biscuits can increase the nutritional value and sensory characteristics of biscuits with the addition of blonde. Based on the description above, research was carried out on "Increasing the Value of Coconut Blondo as a Functional Food as an Alternative for Stunting Prevention," using blonde as an additional ingredient in making biscuits based on potato flour.

II. Materials and Method

2.1 Materials and tools

The ingredients that will be used in this research are coconut, purple sweet potato, potato, margarine (blue band), eggs, granulated sugar (tulku), salt (mustard), milk powder (dance), baking powder (keep people), vanilla (oppose people) and cornstarch (maizenakua) and chemicals for analysis of protein, fat, content, ash, fiber and others.

The tools used are an oven, grinder, slicer, mixer, pasta maker, sieve (80 mesh), knife, cutting board, container, spatula, jar, digital scale, electric oven, and stove. The analytical tools used are a moisture oven, Kjeldahl, furnace, Erlenmeyer, hot plate, measuring cup, glass beaker, desiccator, and analytical balance.

2.2 Materials and tools

This research used a descriptive method with 4 treatments, adding coconut blonde with potato flour (B). Samples were repeated three times for each sample.

Treatment	Potato Starch (g)	Coconut Blondo (g)
B1	100	0
B2	100	10
B3	100	30
B4	100	50

2.3 Research procedure

Making Potato Flour

At this stage, the potato tubers are peeled, sliced, and dried in the oven until they are weighed, ground, and sifted with a 60-mesh sieve.

2.4 Making Coconut Blondo

Old coconut meat (10-12 months old) is crushed with a ratio of coconut meat: water 1:1, pressed with a tool, and fresh coconut milk is obtained. This fresh coconut milk is then cooked for approximately 3 hours until blond lumps form, which settles into a brownish color. Next, the blonde is removed and drained.

2.5 Biscuit Making

At this stage, the biscuit-making process is carried out, starting with the dough being formed and baked in a drying oven at a temperature of 180° C for 20 minutes

2.6 Analysis Method

Chemical Analysis (Proximate Test)

1. Water Content
   Determination of water content using the thermogravimetric method. 14 A total of 2 g of sample was weighed. After that, put it in an aluminum cup whose weight is known. Then, the cup was placed in the oven at 105ºC for 3 hours. Then, it was cooled in a desiccator and weighed. Drying was repeated until a constant weight was obtained.
2. Ash content
   Determination of ash content using the ash method to determine total ash.14
3. Protein Level
   Determination of water content using the Kjeldhal-Mikro method.14
4. Fat content
   Determination of fat content using Soxhlet extraction. 14
5. Carbohydrate levels
   Determination of carbohydrate content uses the by-difference method, namely with calculations involving water content, ash content, protein content, and fat.
6. Biscuit Sensory Testing
   Sensory testing of biscuits uses an organoleptic test of the panelists' level of preference (hedonic scale) regarding the color, texture, smell, and taste of the biscuits.

III. Results and Discussion

3.1 Results of Chemical Composition Analysis of Raw Materials

The average values of the analysis results for water, ash, protein, fat, carbohydrate, crude fiber, and calorific values of potato flour and coconut blonde can be seen in Table 1.

Table 1. Average values for water content, ash content, protein content, fat content, carbohydrate content, crude fiber content, and calorific value of raw materials

Component	Potato flour	Coconut Blondo
Water content (%)	9.60	2.89
Ash content (%)	4.36	4.64
Protein content (%)	5.80	16.17
Fat level (%)	0.96	53.13
Carbohydrate content (%)	79.29	23.17
Crude Fiber Content (%)	2.81	3.96
Calorific value	349 Kcal	635.52 Kcal

Results of the chemical analysis of biscuits with the addition of potato starch-based Blondo on water content, ash content, protein, fat, carbohydrates, crude fiber, and calories can be seen in Table 2.

Table 2. Average Chemical Content of Biscuits with the Addition of Blondo Potato Starch-Based

Treatment	Water content (%)	Ash Content (%)	Fat (%)	Proteins (%)	Carbohydrate (%)	Crude Fiber (%)	Calories (Kcal)
B1	2,2 3	2, 96	1 9.71	7.27	67.83	2, 79	4 77.79
B2	2, 94	2.83	21.79	8.16	64.28	2, 84	4 85.87
B3	4, 97	3.31	27.35	9.89	54.48	2, 88	503.63
B4	5, 19	4.04	33.32	11.03	46.42	2, 93	529.68

Table. 2 shows that the highest moisture content in biscuits was 5.19% in treatment B4, followed by treatment B3 at 4.97%, treatment B2 at 2.94%, and the lowest moisture content in treatment B1 at 2.23%. These results show that the more coconut blondo is added, the higher the water content. The higher water content of the biscuits is because coconut blonde contains a lot of protein, which can absorb water in the biscuits during the oven process. Water absorption is thought to be due to carboxyl groups in protein, so the higher the protein content in biscuits, the higher the water content. The research results showed that the average water content value in all treatments met the biscuit quality requirements of SNI 01-2973-1992, namely a maximum of 5%. A biscuit's moisture content below 5% can maintain the shelf life of the biscuit; if the moisture content is less than 5%, it will be free from damage and harmful microbes.

The highest ash content in treatment B4 was 4.04%, followed by treatment B3 at 3.31%, treatment B2 at 2.83%, and the lowest ash content in treatment B1 at 2.96%. It can be seen that the ash content increases with the addition of coconut blondo. The research results showed that the average value of ash content in all treatments did not meet the quality requirements for biscuits SNI 01-2973-1992, namely a maximum of 1.5%. Ash content is determined by determining the mineral content in biscuits.

Table 2 shows that the highest protein content was in treatment B4 at 11.03%, followed by treatment B3 at 9.89%, treatment B2 at 8.16%, and the lowest protein content was in treatment B1 at 7.27%. The results showed that the protein content of potato flour biscuits increased with the addition of coconut blondo. This is because the protein content in blonde is high. The protein content in the blonde used in this study was 16.17%. The research results showed that the average protein value in all treatments met the quality requirements for biscuits SNI 01-2973-1992, namely a minimum of 5%.

The fat content of potato flour biscuits with the addition of coconut blonde had the highest average value in treatment B4 at 33.32%, followed by treatment B3 at 27.35%, treatment B2 at 21.79%, and the lowest in treatment B1 at 19.71%. The fat percentage in potato flour biscuits increases with coconut blondo. This is because blondo has a relatively high fat content. The research results showed that the average value of fat content in all treatments met the quality requirements for biscuits SNI 01-2973-1992, namely a minimum of 9.5%.

Table 2 shows that the highest carbohydrate content was in treatment B1 at 67.83%, then treatment B2 was 64.28%, treatment B3 was 54.48%, and the lowest carbohydrate was in treatment B4 at 46.42%. The carbohydrate content is calculated by difference, namely 100% minus % water content, % ash content, % protein content, and % fat content. The percentage of carbohydrates in potato flour biscuits decreases as the amount of coconut blondo is added. This is because coconut blondo has a high protein and fat content, while the carbohydrate content in blondo is shallow. The higher the percentage of coconut blondo added, the carbohydrate percentage decreases. The research results showed that the average value of carbohydrate content in treatments B1 to B4 did not meet the biscuit quality requirements of SNI 01-2973-1992, namely a minimum of 70%.

The highest crude fiber was in treatment B4 2.93%, followed by treatment B3 2.88%, treatment B3 2.84%, and the lowest was treatment B1 2.79%. The crude fiber content in potato flour biscuits increases as the concentration of coconut blonde is added. The high oil fiber content in the biscuits is thought to be due to the high crude fiber content in the coconut blondo used, so as more coconut blondo is added, the crude fiber content of the biscuits also increases. The crude fiber content in coconut blondo is 3.96% greater than that in potato flour, which is 2.81%.

Table 2 shows that the highest average calorie value of biscuits was in treatment B4, namely 529.28 kcal, while the lowest calorie value was in treatment B1, namely 477.79 kcal. The calorific value of biscuits is obtained by converting protein, fat, and carbohydrates. Fat is the most significant source of energy, where 1 gram of fat can be converted into 9 kcal of

energy, while protein and carbohydrates produce 4 kcal of energy per gram. The research results showed that the average calorie value in all treatments met the biscuit quality requirements of SNI 01-2973-1992, namely a minimum of 400 kcal.

Organoleptic Test

The results of testing the panelists' level of preference for biscuits with the addition of potato starch-based blondo include color, aroma, taste, texture, and crunchiness. This can be seen in Table 3.

Table 3. Organoleptic Test Results for Potato Flour Biscuits with the Addition of Blondo.

Treatment	Color	Aroma	Flavor	Texture	Crispness
B1	6.04	5.04	4.85	5.07	4.96
B2	5.07	5.37	5.04	5.33	5.37
B3	5.22	5.48	5.96	6.78	6.59
B4	5.33	6.07	6.07	6.15	6.26

Color is one of the essential things in a product to attract the panelists' attention when evaluating it. The results of organoleptic testing on the color of biscuits with the addition of potato starch-based blondo ranged from 5.07 (Somewhat like) – to 6.04 (Like). The highest score for biscuit color by panelists was obtained in treatment B1 (Without added blonde) with a score of 6.04 in the like category.

The aroma (smell) of biscuits with the addition of blondo made from potato flour ranged between 5.04 (Somewhat like) – 6.07 (Like). The highest score on the panelists' liking level test was obtained in the treatment with the addition of 50 g of blonde (treatment B4).

The taste of biscuits with adding potato starch-based blondo obtained panelists' liking levels ranging from 4.85 (Somewhat like) to 6.07 (Like). The highest score by the panelists was obtained in treatment B4 (Addition of 50 g blondo).

The test results for the level of preference for the texture of biscuits with the addition of coconut blondo based on potato flour ranged from 5.07 (Somewhat like) – to 6.78 (Very like). The highest assessment by the panelists was B3 (Addition of 30 g blondo).

The crunchiness of the biscuits with the addition of blondo based on potato flour ranged between 4.96 (Slightly crunchy) – and 6.59 (Very crunchy). The highest assessment by the panelists was obtained by adding 30 g of blonde (Treatment B3).

The average organoleptic test of the panelists' preference for biscuits with adding potato starch-based blondo showed that overall, the blondo addition treatment was obtained in treatment B4 (Addition of 50 g of blondo). It can be seen in Figure 1.

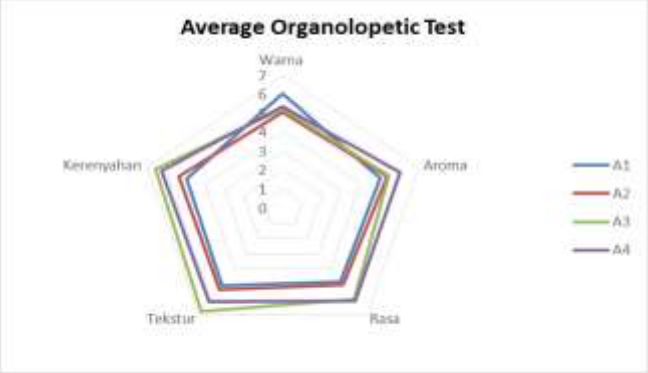

Figure 1. *Average Organoleptic Test*

IV. Conclusion

The addition of blondo to making biscuits made from potato flour in terms of nutritional content of protein and fat and calories is in accordance with SNI Biscuits and is liked by the panelists. The biscuits produced can be used as snacks for pregnant women and toddlers as an alternative to preventing stunting. The percentage of carbohydrates in potato flour biscuits decreases as the amount of coconut blondo is added. This is because coconut blondo has a high protein and fat content, while the carbohydrate content in blondo is very low. The higher the percentage of coconut blondo added, the carbohydrate percentage decreases. The calorific value of biscuits is obtained by converting protein, fat and carbohydrates. Fat is the greatest source of energy, where 1 gram of fat can be converted into 9 kcal of energy, while protein and carbohydrates produce 4 kcal of energy per gram.

The research results showed that the average calorie value in all treatments met the biscuit quality requirements of SNI 01-2973-1992, namely a minimum of 400 kcal. The research results showed that the average value of water content in all treatments met the biscuit quality requirements of SNI 01-2973-1992, namely a maximum of 5%. A biscuit moisture content below 5% can maintain the shelf life of the biscuit, if the moisture content is less than 5% it will be free from damage and from harmful microbes. By using potato starch with the addition of coconut blondo in making biscuits, it is proven raising the nutritional value and sensory characteristics of biscuits. as an alternative for stunting prevention.

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